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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,237	12/30/2004	Willem J. Quadakkers	2002P02127WOUS01	5094

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Siemens Corporation
Intellectual Property Department
170 Wood Avenue South
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EXAMINER

SAVAGE, JASON L

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 04/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No. .

10/520,237

Applicant(s)

QUADAKKERS ET AL.

Examiner

Jason L. Savage

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-18 and 20-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-18 and 20-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20041230</u> . | 6) <input type="checkbox"/> Other: _____ |

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Claim Objections

Claims 15 and 22 are objected to because of the following informalities:

Claim 15 recites that the intermediate and outer layers are continuously graded. However, the specification only recites that intermediate layer as being continuously graded (paragraph [0059]). It is unclear if Applicant intended both layers to be graded or just the intermediate layer.

Claim 22 is a duplicate of claim 21.

Appropriate correction or clarification is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 12 and 27 each recite the outer layer is Ni base however it teaches that Co may be contained in an amount of up to 80%. Such a layer containing 80% Co in addition to the other elements which are required in the claim would not be Ni base. It is noted on paragraph [0047] of the instant Application that the Co content is also taught to be up to 30%. Should Applicant intent to claim alloys having up to 80% Co, it is suggested that instead of stating the alloy is Ni base that the balance is Ni.

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The last two lines of claims 12 and 27 further recite "and M is an element selected from the group consisting of Co, Fe, and Ni". However, as was recited previously in the claim, the intermediate MCrAlY layer is Ni base and no Fe content is recited. As such, the limitation in the last two lines is superfluous and conflicting with the prior claim limitations. The rejection could be overcome by deleting the phrase in question.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12-18 and 20-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kojima et al. (US 5,507,623).

Kojima teaches an oxidation resistant turbine component comprising MCrAlY coating layers (col. 2, ln. 45-67). Kojima further teaches that the MCrAlY coating layers comprises an intermediate alloy coating of NiCoCrAlY and an outer alloy layer of NiCrAlY (col. 4, ln. 27-64). Kojima teaches the intermediate layer has a composition of 10-30% Cr, 5-15% Al, 0.1-1.5% Y and the balance being Co and Ni with a Co/Ni ratio of 0.5 or more (col. 4, ln. 42-51). Kojima further teaches that outer layer has a composition of 10-30% Cr, 5-15% Al and 0.1-1.5% Y with the balance being Ni (col. 4, ln. 51-54). Kojima also exemplifies embodiments wherein the outer layer is an alloy of

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NiCoCrAlY wherein the Co content is between 20-30 wt%, Cr content is between 18-21 wt% and the Y content is 0.5 wt% (Table 1, examples 22-24).

Kojima does not exemplify an embodiment wherein the outer layer is a NiCoCrAlY alloy with the Al content being less than 6.5%. However, Kojima teaches that the Al content in the outer layer may be as low as 5% and provides embodiments wherein the Al content in the outer layer is 4 and 5 wt% (col. 4, ln. 51-54 and Table 1, examples 9-10). As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to have employed an outer layer having a NiCoCrAlY composition having the claimed amount of the recited elements and between 5-6.5 wt% Al since Kojima teaches that such materials are suitable for use.

Regarding the limitation that the outer layer consists of a pure γ phase, Kojima teaches that the γ phase is large and the β phase is intended to be reduced as much as possible (col. 3, ln. 28-40). As such, it would have been obvious to one of ordinary skill in the art to have formed the outer layer to consist of a γ phase since Kojima teaches that would be desirable.

Regarding claims 13 and 14, Kojima teaches the intermediate layer is on the substrate (Figure 6A) and that 2 layers are used to form the protective layer.

Regarding claim 15, Kojima teaches that the layers are subjected to a diffusion treatment which result in a graded concentration (col. 8, ln. 50-64).

Regarding claims 16 and 24, although Kojima does not specifically recite that the outer layer is thinner than the intermediate layer, absent a teaching of the criticality or showing of unexpected results, the relative thickness of the layers would not provide a

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patentable distinction over the prior art. It would have been obvious to one of ordinary skill the provide the layers in any relative thicknesses that would still provide suitable protection to the substrate.

Regarding claims 17-18 and 28-29, Kojima teaches that additional elements such as Ta, Zr, and Ce may be added to the intermediate and upper layers (col. 4, ln. 13-27).

Regarding claims 20 and 30, although Kojima does not exemplify an embodiment wherein the outer layer is a NiCoCrAlY alloy containing the claimed elements and Al in a content between 5-6% such as claimed, it does teach ranges which overlap those claimed. As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to have employed an outer layer having a NiCoCrAlY composition having the claimed amount of the recited elements and between 5-6.0 wt% Al since Kojima teaches that such materials are suitable for use.

Regarding claims 21-22, although Kojima does not recite the addition of Ti or Sc to the intermediate layer, it would have been obvious to one of ordinary skill in the art have added any other elements which are known to be suitable for use in a NiCoCrAlY layer.

Regarding claim 23, it is conventional to add thermal barrier coatings onto MCrAlY layers to provide additional high temperature protection to the substrate material. As such, it would have been obvious to one of ordinary skill in the art to have added a thermal barrier coating on the outer layer to provide the substrate with increased high temperature protection.

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Regarding claim 25, the claims are drawn to the product, not the method of making. Absent a teaching of how the claimed heat treatment in an atmosphere with the claimed low oxygen partial pressure would provide a material difference between the claimed product and that of the prior art, it would not provide a patentable distinction over the prior art.

Regarding claim 26, Kojima teaches the substrate is a gas turbine component (col. 1, ln. 11-15).

Response to Arguments

Applicant's arguments with respect to claims 12-18 and 20-30 have been considered but are moot in view of the new ground(s) of rejection.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Savage whose telephone number is 571-272-1542. The examiner can normally be reached on M-F 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jason Savage
4-14-06


JENNIFER C. MCNEIL
SUPERVISORY PATENT EXAMINER
4/17/06